10/536970

METHOD OF INSTALLING ALCOHOL BEVERAGE BAG INTO A CONTAINER

Field of the Invention

The present invention relates to improved alcohol beverage bags and a method of installing alcohol beverage bags into containers.

Background of the Invention

It is known to construct an alcohol bag in a manner that when the bag is filled with an alcohol beverage, such as, for example, beer or wine, the bag resembles the shape of the container in which the bag is housed.

In applications where the bag is used to contain beer, the bags are typically housed in a keg having a generally cylindrical shape. The bag has a neck portion secured to the keg. The bag is deflated, passed through a keg aperture and then filled with beer. After the beer is dispensed from the keg, the bag is removed through the aperture. Typically, the bag comprises two circular panels spaced apart by a cylindrical shaped sheet. The sheet is welded at its ends to the circular panels to form two end seams. The sheet is also welded along its length to form a third seam. A fourth seam is made where the neck passes through one of the circular panels. During bag removal from the keg, the end seams have a tendency to bunch together and are pulled together through the keg aperture. As a consequence, stress is placed on the end seam which reduces the recycling life span of the bag. Accordingly, any improvement in bag construction that extends the recycling life of the bag is beneficial.

An alternative form of bag comprises a first panel and a second panel having peripheral edges welded together to form a first seam. Each of the first and second panels has an area larger than a cross-sectional area for the keg. This sizing of the panels relative to the keg cross-sectional area permits the panels to be forced apart during bag filling so as to expand the bag internal space to approximate the volume of the keg. The bag has an open neck member passing through an aperture of the first panel and welded thereto to form a second seam.

A problem occurs during bag insertion into the keg. Typically, the keg has an aperture for receiving the bag where the size of the aperture corresponds to the size of the bag neck and the size of the aperture is much smaller than the bulk of the bag. This makes it difficult to insert the bag into the keg. Further care must be taken not to rupture the bag

during its installation in the keg.

Summary of the Invention

It is an object of the present invention to provide a method for installing a bag in a container which method is easier to implement.

It is an object of the present invention to provide a bag suitable for containing an alcohol beverage in a container that places less stress on the bag seams during bag removal from the container.

It is another object of the present invention to provide a bag suitable for use in a beer keg that has fewer seems than a cylindrical formed bag.

In one aspect, the present invention relates to a method of installing a bag into a container to be ready for receiving an alcohol beverage. The container has an aperture for receiving the bag where the aperture of the container has a cross-sectional area smaller than the bulk of the bag. The method comprises the steps of folding the bag into overlapping panels having a bag cross-sectional area able to pass through the aperture cross-sectional area. The method includes inserting this folded bag through the aperture and into the container.

By folding the bag, it is possible to collapse the bulk of the bag in a structured manner whereby the cross-sectional volume of the bag becomes less than or of a size that is able to pass through the cross-sectional aperture of the container without adversely effecting the integrity of the bag wall.

It is contemplated that the method of the present invention may further include the step of removing air from the bag so as to flatten the bag prior to the bag being folded.

The method of installing the bag may further include the steps of sealing the bag to the neck aperture of the container after the bag has been inserted into the container and drawing a vacuum from the container to cause the bag to unfold within the container and be drawn towards the walls of the container. While the bag may unfold by itself after it passes through the aperture or may unfold during the step of inflating the bag, it should be understood that by drawing a vacuum, the bag is positively pulled out of its folded condition towards the inside walls of the container.

In another aspect, the present invention relates to a bag suitable for containing an alcohol beverage, preferably beer, in a container, preferably a keg. The bag comprises a first panel and a second panel having peripheral edges welded together to form a first seam. Each of the first and second panels has an area larger than a cross-sectional area for the keg. This

sizing of the panels relative to the keg cross-sectional area permits the panels to be forced apart during bag filling so as to expand the bag internal space to approximate the volume of the keg. The bag has an open neck member passing through an aperture of the first panel and welded thereto to form a second seam. The bag of the present invention has advantage because it has fewer seams to be stressed during bag insertion and removal into the container than a cylindrical formed bag. The fewer seams also results in a manufacturing labour cost reduction.

The aperture in the first panel of the bag is preferably offset from the center of the panel. This off center aperture orientation reduces the likelihood of the first seam of the bag being bunched up and pulled at one time through the keg aperture during bag extraction. Consequently, less stress is placed on the first seam during bag extraction from the keg thereby enhancing the recycling life of the bag.

In accordance with one embodiment of the present invention there is provided a bag suitable for containing an alcohol beverage when placed in a container having a cross-sectional area and a volume. The bag comprises a first panel and a second panel having peripheral edges welded together to form a first seam. Each of the first and second panels have an area larger than the cross-sectional area of the container. The first panel has an aperture contained therein. The first and second panels are moveable apart from each other when the bag is filled to expand bag internal space to approximate the volume of the container. The bag has an open neck member passing through the aperture of the first panel and welded thereto to form a second seam. The neck has a passageway for filling the bag with the alcohol beverage.

In accordance with another aspect of the present invention, the bag may comprise a cylindrical shaped bag having a neck and four seams. The improvement resides in the neck of the bag passing through a circular bag panel off-set from the center of the circular panel. As a result, when the bag is removed from a keg, the off-set neck pulls the bag from the keg in such a manner that the bag seams are not bunched together and removed at once. Consequently, less stress is placed on these seams.

In accordance with this other embodiment of the present invention therefore, there is provided a bag suitable for containing an alcohol beverage when placed in a keg. The bag comprises two circular panels having peripheral edges welded to a cylindrical panel to form the bag with three seams. The bag is expandable to approximate the volume of the keg. The first panel has a center and an aperture therein positioned off-center from the center. The bag has an open neck member passing through the aperture of the first panel and welded thereto

to form a fourth seam. The neck provides a passageway for filling the bag.

Brief Description of the Drawings

For a better understanding of the nature and objects of the present invention reference may be had to the accompanying diagrammatic drawings in which:

Figure 1 is a perspective view of the bag of the present invention shown in a flattened condition;

Figure 2a is a perspective view of a bag of the present invention shown inserted and deflated in a keg;

Figure 2b is a perspective view of a bag of the present invention shown inserted and deflated in a keg;

Figure 3 is a view of a cylindrical shaped bag suitable for insertion into a keg; and

Figures 4 through 9 illustrate various steps in the method of the present invention.

Detailed Description of the Invention

Referring to Figure 1 there is shown a bag 10 having a preferred construction for use in a container 12. The bag 10 is suitable for use for housing an alcohol beverage and in the preferred embodiment for housing beer. The bag 10 is pliable and preferably comprises two layers of plastic material 14 and 16 which are welded together along their peripheral edges 20 and 22 respectively to provide a peripheral edge seam 18. The panels 14 and 16 are generally rectangular in shape and in the preferred embodiment are square. It should be understood that each panel may comprise one or more layers of plastic material joined along the peripheral edges and that these layers are not necessarily laminated together.

The first panel 14 has an aperture 24 positioned in the first panel offset from its center at 26. A neck 30 extends through the first panel 14 at aperture 24 and is secured to the aperture 24 by a weld 32. The neck 30 typically comprises a rubber like material and has an opening or passageway 34 through which alcohol or beer is filled into the space or volume between the panels 14 and 16.

The bag 10 is shown in Figure 1 to be considerably oversized relative to the size of the keg 12. The keg 12 has top and bottom circular walls 40 and 42 with a cylindrical side wall 44. The bag 10 has a cross sectional area that is considerably larger than the cross sectional area of the keg 12. That is the periphery of panels 14 and 16 have an area which is considerably larger than the area of the top or bottom and wall portions 40 and 42 of the keg

12. In an alternative embodiment where the inflated bag has a cylindrical shape, the size of the inflated bag may correspond to the size of the keg 12.

Referring to Figure 2a, there is shown a view of the keg 12 having the bag 10 inserted into the keg 12 through an upper aperture 46 in the top end wall portion 40 of the keg 12. The bag 10 is adapted to have its neck 30 to be secured with aperture 46 of corresponding size and shape and the panels 14 and 16 are pulled through the aperture 46 into the internal volume of the cylinder or keg 12 in accordance with the method of the invention described hereinafter. The panels 14 and 16 are shown in Figure 2a with the seam 18 following a generally serpentine type shape. It should be understood that in Figure 2, the bag 10 is not inflated or filled with any alcohol. The shape shown is simply illustrative to show that the bag may be stretched to have several folds as it extends into the interior of the keg 12. When CO_2, alcoholic beverage or beer is inserted through neck 30 into the bag 10, the bag expands such that portions of panels 14 and 16 come into contact with cylindrical walls 44 and the end walls 40 and 42 of the keg 12. The unfolding is illustrated by the arrows in Figure 2b.

Advantage is found with the bag 10 shown in Figures 1 and 2 in that the bag only has two seams 18 and 32. This reduction in the number of seams compared to a bag comprising a cylindrically shaped bag results in a bag having less opportunity for wear along the seams during insertion and extraction of the bag 10 from the keg 12. By reducing the stress placed on the seams 18 of the bag 10, the bag may be recycled more times and its life expectancy increased or enhanced.

Referring to Figure 3 there is shown an alternative embodiment for a cylindrical bag 80 which may be used with the cylinder 12 shown in Figure 1. The cylindrical bag 80 has a top panel 60, a bottom panel 62 and a side panel 63. The side panel 63 is wrapped in a cylindrical fashion and is joined along seam 64. The top panel 60 is joined to the side panel 63 by seam 66 and the bottom panel 62 is joined to the side panel 63 by seam 68. These seams are formed by welding. A neck portion 70 which is rubber-like in material will also extend through the upper end portion or wall panel 60 of the cylinder of the bag 80 and is secured to the upper panel 60 by a separate weld 72. While this bag is provided with three seams on the bag plus an additional seam for the neck, the stresses placed on the seams by the bag 80 will be considerably less due to the fact that the neck 70 is positioned off center from the center 74 of the top portion or panel 60 of the bag 80.

In accordance with the present invention it should be understood that the neck 30 of the bag 10 of Figure 1 typically has a cross-sectional area or a diameter in this preferred embodiment that corresponds to the diameter 46 of the container 12. In some embodiments,

securing rings or intermediate rings (not shown) may surround the neck 30 so as to seal or positively locate the neck 30 against the aperture 46. As illustrated in Figure 1, the cross-sectional area of the bag below the neck 30 is sufficiently larger than the cross-sectional area or diameter of aperture 46 of container 12. It should also be understood that the Figures utilized herein are for the purposes of illustration and that the exact dimensions of the cross-sectional areas of the neck 30 of bag 10 and aperture 46 of container 12 are not to scale.

In order to effectively insert and install the bag 10 within the container 12, the method of the present invention comprises the first step shown in Figure 4 of orientating the bag 10 to one side of, or as in this instance, below the neck 30. The bag 10 is then deflated by removing any air or contents out through the neck by collapsing the bag against itself. Next, the bag is folded as indicated by arrows 92 about fold line 94. This results in the partially folded bag 10 configuration shown in Figure 5. Next the bag 10 is folded at folds 96 behind the bag as indicated by arrows 98 to result in the folded bag 10 shown in Figure 6. In Figure 6, the bag 10 has a folded cross-sectional area which substantially corresponds to the cross-sectional area of neck 30.

In the next step, as shown in Figure 7 the bag 10 is moved in the direction of arrow 100 into the container 12 through aperture 46.

The next step is to seal the neck 30 to the aperture 46 and at this time that the bag may start to unfold on its own as represented by arrows 21 shown in Figure 8. In order to assist the bag in unfolding and moving towards the inner walls of the keg 12, a vacuum source 102 is applied through a valve 104 of the container 12. It should be understood that the valve 104 in an alternative embodiment may pass through a ring type valve assembly which forms part of the sealing mechanism of the neck 30 to the aperture 46 of the keg 12. In the next step a vacuum is applied as indicated by arrow 106 through a vacuum device or pump 102 from valve 104. This evacuates the container 12 causing the walls of the bag 10 to be drawn towards the inner walls of the keg 12.

It should be understood that once the bag 10 is inserted in the keg 12, it may be inflated by an initial purging of the bag 10 with CO_2 or may be inflated by filling the bag 10 with a beverage. This inflation of the bag 10 results in the bag 10 unfolding.

Returning to Figure 3 and the removal of the bag 80 from the keg, as the neck 70 is pulled and removed from the aperture of the keg 12, the deflated bag 80 is pulled in a manner that the seams are not bunched together and pulled through the aperture 46 in the keg all at once. If the neck 70 is located at center point 74, then as the bag is pulled from the keg, the panel 60 is pulled from its center downwardly resulting in a good portion or all of seam 66

being pulled through the keg 46 at the same time. Also, a good portion or all of seam 62 would also be pulled through the aperture 46 in the keg 12 at the same time. By off setting the neck 70 from the center 74 of the panel, the seams 62 and 66 are not drawn at the same time through the center aperture 46 in the keg thereby reducing the stresses placed on these seams.

While the bag structure of Figure 3 with the multiple seams is less preferred to the bag shown in Figure 1 with the two seams, it should be understood that there may be a preference to bag manufacturers to use a cylindrical shaped bag for insertion into a cylindrical shaped keg. By manufacturing bag 80 with the off set neck 70, less stress is placed on the end seams of the bag. With less stress placed on the seams of the bag, the recycling life span of the bag is enhanced.

The offset neck feature and associated advantages discussed with respect to the cylindrical bag 80 of Figure 3 is equally applicable to the square bag of Figure 1. In the rectangular bag 10 of Figure 1, the neck 30 is offset from center 26 of panel 14 and is preferably located in a corner of the panel 14.

It should be understood that the method of folding the bag 10 described herein is merely an example of one manner in which the bag of Figure 1 may be folded for one particular embodiment or construction of a bag and that other folding patterns will be readily apparent to a person skilled in the art for the bags of Figures 1 and 3 and other bag shapes in view of the teachings contained herein.